


SOUTH CAROLINA'S COMPETITIVE

EDGE



ADVANCED MANUFACTURING

MANUFACTURING EXCELLENCE
IN SOUTH CAROLINA

ECONOMIC DEVELOPMENT *and* GROWTH *through* EDUCATION



ADDING VALUE TO YOUR WORKFORCE

The ROI of Military Hires

Today's armed forces are a highly trained, motivated workforce. They bring leadership and management skills to the table — soft skills that are hardest to grow. Employers can teach business and industry skills, but service members arrive with the talent and proficiencies needed to take any organization to the next level.

Active duty or retired, most veterans and service members embody certain core values unique to military service: attributes like discipline, battle-tested leadership, a solid work ethic, trainability, adaptability and the ability to thrive under pressure.

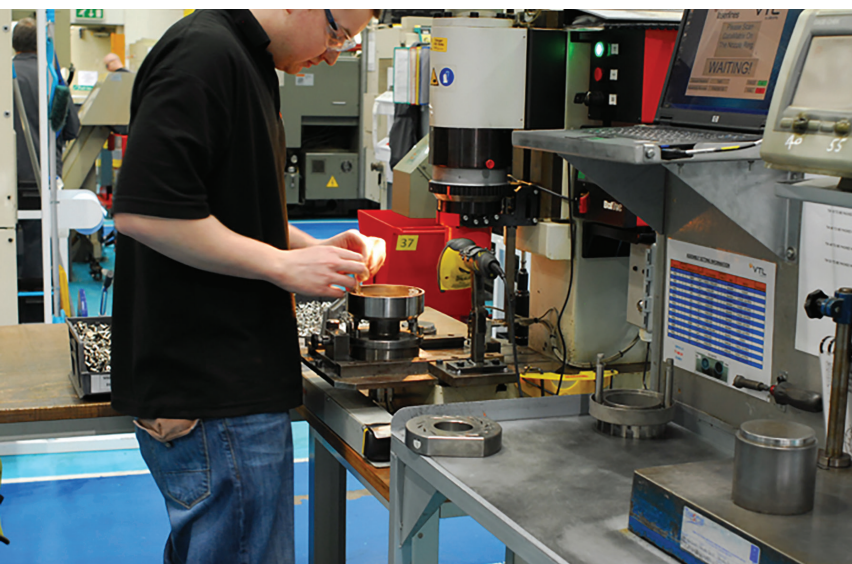
Employers and hiring managers can access this desirable workforce through Operation Palmetto Employment (OPE), South Carolina's military hiring initiative. At no cost, OPE supports business owners and hiring managers by providing pre-screened military applicants based on your qualifications. There are many opportunities to participate in military-specific job fairs and hiring events statewide. Companies that pledge to hire and retain South Carolina's transitioning service members can also receive special recognition and training by applying to become a certified Palmetto Military Employer (PME).

To learn more about how OPE can help increase your human capital, visit OperationPalmettoEmployment.sc.gov or call (803) 299-1713.



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PALMETTO
EMPLOYMENT**

OPERATIONPALMETTOEMPLOYMENT.SC.GOV



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ADVANCED MANUFACTURING

- 2 Greenfield Industries Invests in its Future with Youth Apprenticeship
- 6 Apprenticeship Means Opportunity for Eaton
- 9 readySC Helps Winbro Recruit the Right Workforce
- 10 VTL Precision Reaps Rewards of Youth Apprenticeship
- 14 South Carolina's Best Kept Secret in Advanced Manufacturing
- 22 A Seamless Training Solution for Horsehead




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**GREENFIELD INDUSTRIES
INVESTS IN ITS FUTURE**
with Youth Apprenticeship



Greenfield Industries, Inc. can trace its long and successful history in South Carolina to 1961 and the construction of the Imperial Drills Company manufacturing site in Seneca. The company evolved over the years into Greenfield Industries, and in 2009 became part of the Top-Eastern Group (TDC), the world's largest manufacturer of twist drills. Building on this enduring success, TDC recently established its overseas headquarters in Seneca to manage all its operations outside of China.



To prepare for the company's future growth, Greenfield has established a youth apprenticeship program to help train its next generation of productive employees. Ty Taylor, president of Greenfield Industries, sees this as a way to enlighten high school students to career opportunities in the manufacturing field. "This program lets us bring young people into manufacturing. Through their experience at Greenfield, they can see the opportunity that manufacturing offers and gain experience that we hope benefits them through their lives."

Anthony Tosti, CFO Greenfield Industries, Inc. / TDC Overseas Operations, explains how apprenticeship was established at Greenfield. "The programs started in 2014 when Apprenticeship Carolina™

approached Greenfield. These qualified apprentice programs are in-line with our philosophy and the spirit of our owner Jeff Chee. We work closely with Apprenticeship Carolina, Tri-County Technical College and the Hamilton Career Center to define a program to fit our needs while providing the associates who joined our program the opportunity to gain certification and skills while making money doing it. Grants have been used to partially defray educational costs incurred by the apprentices."

South Carolina offers tax credits to companies for each registered apprentice, and the South Carolina Apprenticeship Initiative (SCAI) grant provides the funds to help offset training costs associated with

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"Take a chance on our youth and see how it can make you and your business better."

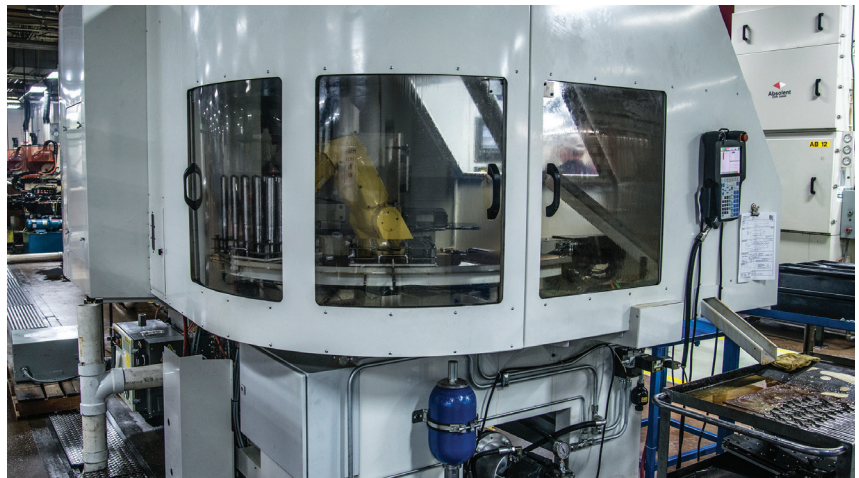
— TY TAYLOR, PRESIDENT OF GREENFIELD INDUSTRIES, INC.



About Greenfield Industries

Greenfield Industries, Inc. manufactures and sells branded and private label cutting tools to the industrial and consumer markets in North America. It is owned by TDC Cutting Tools, the world's largest manufacturer of high speed steel cutting tools. Greenfield employs over 320 at the Seneca site, where it produces HSS industrial drill bits, taps, dies and carbide end mills.

TDC has manufacturing and/or sales locations in Asia, Africa, Europe, North and South America. Greenfield and its predecessors pioneered the cutting tool industry in the U.S. in 1834. Brands owned by Greenfield such as Cleveland, Chicago-Latrobe, Cle-Line, Greenfield Threading and Bassett are household names in the cutting tool industry with a long history and tradition of quality.



respective apprenticeship programs. But the most prized component of apprenticeship is the creation of a trained workforce.

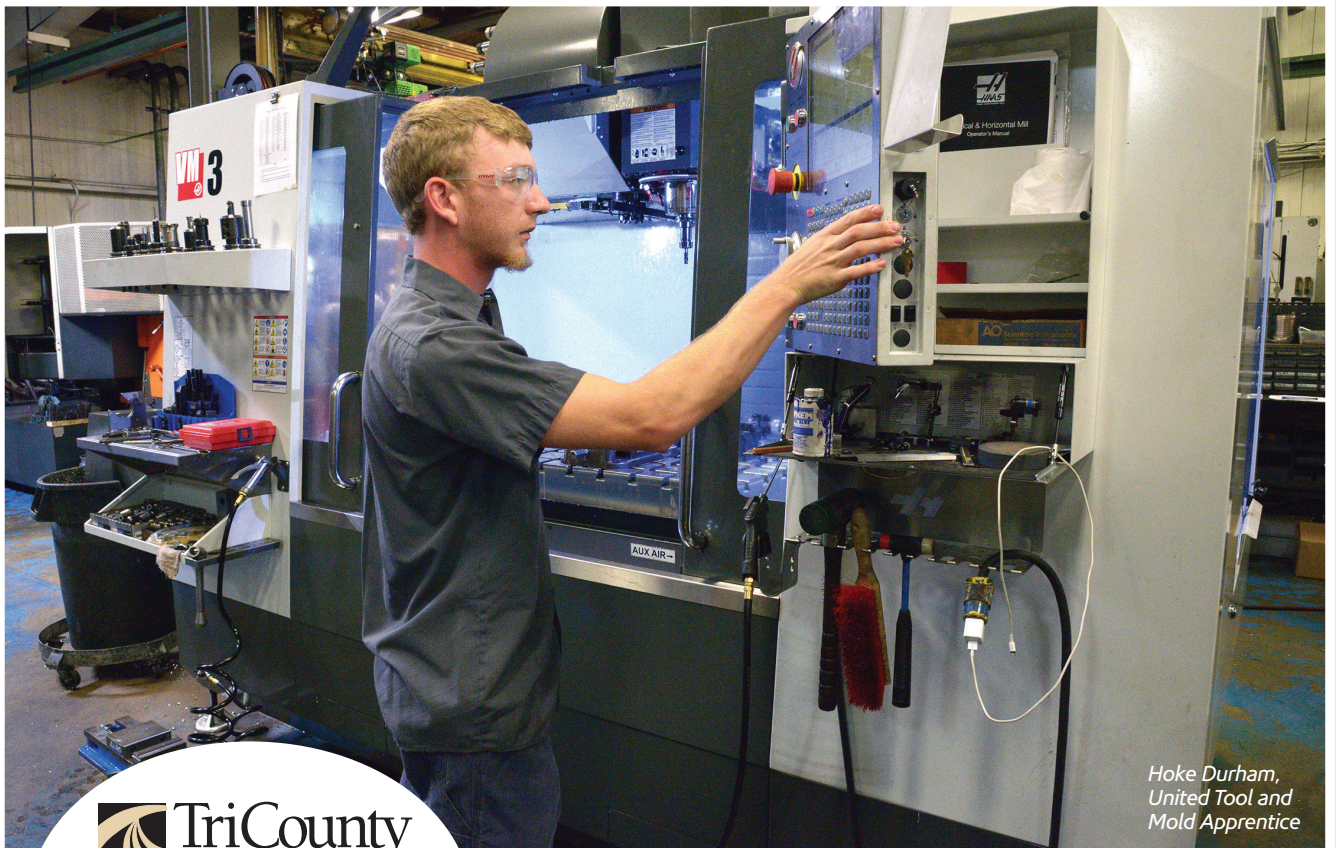
Susan Miller, leader of the Greenfield Apprentice Program, says, "The tax credit and SCAI grant are excellent incentives, but the most beneficial outcome is the development of the student. We gain a productive employee as they progress in their skills."

Miller says that Greenfield's partnership with Tri-County Tech and Oconee County's Hamilton Career Center is key to training the students. "They are preparing the students for jobs in our plant. The students have a basic foundation when they leave the career center. Our apprenticeship coordinator works closely with the instructor at Hamilton Career Center on the selection and development of the students."

Ty Taylor believes that apprenticeship is invaluable to both the student and company. "The youth apprenticeship program creates a win-win situation. It brings the student and the company experience that lets each develop and grow personally and professionally, hopefully giving a young person the experience to have a career in manufacturing. The student, Greenfield and community all win with this program."

For other companies considering youth apprenticeship, Taylor says, "Take a chance on our youth and see how it can make you and your business better." He also adds that he appreciates South Carolina's investment in apprenticeship. "I would encourage the state to continue to support this program and reward the students and companies that participate." ■

Tri-County Technical College Focuses on Youth Apprenticeship



Hoke Durham,
United Tool and
Mold Apprentice



Tri-County Technical College (TCTC), along with Apprenticeship Carolina™, works with several local manufacturers to offer apprenticeship opportunities in advanced manufacturing. For companies like United Tool and Mold, Greenfield Industries and others, training the next generation of skilled workers begins in high school.

Jeromy Arnett, production administration manager at United Tool and Mold in Easley, believes that the school-to-registered apprenticeship program is key to backfilling his company's aging workforce. "We have to start early," Arnett says. "This program builds the workforce of tomorrow."

Hoke Durham appreciates the opportunity to be a part of that workforce. "The apprenticeship showed me

what I wanted to do with my life," said Durham. "I never thought I would start my career at age 16. I thought I would be flipping burgers as a teen. I never dreamed by age 18, I'd be an apprentice tool maker at United Tool and Mold while pursuing a degree at Tri-County Technical College." A 2015 Scholar Technician scholarship from Alliance Pickens and the tuition reimbursement program at United Tool and Mold are enabling Durham to attend TCTC debt free while he studies Mechatronics.

Durham is a "shining example" of how youth apprenticeships can lead to a full-time job in manufacturing, according to Arnett. "He is the best employee we could ask for."

Learn more: www.tctc.edu

Jeromy Arnett describes the United Tool and Mold School-to-Registered Apprenticeship Program in South Carolina:
www.apprenticeshipcarolina.com/testimonials/school-to-registered-apprenticeship.html



APPRENTICESHIP MEANS OPPORTUNITY FOR EATON



Detra Mardis, human resources manager with Eaton in Sumter, South Carolina, explains how apprenticeship creates opportunities for the company, the employees and the local technical college.

EDGE: *What are some of the top positive outcomes of having an apprenticeship program?*

Detra Mardis: Our personal commitment to developing knowledge and skills helps us achieve Eaton's business goals. Eaton promotes lifelong learning by providing

many avenues through which employees are able to expand their competencies and prepare for personal and professional growth. An apprenticeship program is an additional tool to help recruit and retain talent. It also helps to build a pipeline of successors for key roles within the organization.

EDGE: Tell us about the implementation of your apprenticeship program. How did Apprenticeship Carolina™ and your local tech college help you get it started?

DM: Central Carolina Technical College (CCTC) brought the opportunities to Eaton and paired us with an Apprenticeship Carolina consultant. The consultant actually came to the facility, provided an orientation of the online system and provided assistance to the human resources team as apprenticeship information was uploaded. We appreciate CCTC keeping us in mind as programs and other benefits became available.

EDGE: Is there a successful apprentice that you'd like to highlight?

DM: Several of the new employees we have hired by way of the former South Carolina Manufacturing Certification program at CCTC have been promoted to positions beyond the entry-level manufacturing roles for which they were initially hired. Examples include Gary Chapman, who was originally hired into a production associate position but was promoted to a Lean/Continuous Improvement Technician after his first year of employment.

EDGE: What are some of the financial benefits of apprenticeships?

DM: In addition to the tax credits and the South Carolina Apprenticeship Initiative (SCAI) grant, we were able to reduce our recruiting expenses by partnering with CCTC. The school had an accessible pool of candidates for us to consider.

EDGE: How is your local technical college helping to meet your training needs?

DM: Eaton has a long-standing partnership with CCTC. The college has helped us develop training programs for existing employees on many occasions. We've hired several students who've successfully completed the manufacturing certification program and have also sponsored internships for the mechanical drafting program.

**"Just do it! All parties
(employees, employer and the
local college) reap the
benefits of apprenticeship."**

— DETRA MARDIS, HUMAN RESOURCES MANAGER



Powering Business Worldwide

EDGE: Can you think of a word or phrase that best describes apprenticeship... why?

DM: Progressive – it's not an avenue we've historically used at this facility. We've been able to add new members to the team by simply thinking outside the box.

EDGE: What do you like most about your apprenticeship program?

DM: There are several aspects that we like about apprenticeship:

- The apprenticeship program strengthens our partnership with the local technical college.
- It required very little effort on our part to get started.
- The apprenticeship program promotes career opportunities within the local community.
- Apprenticeships offer an additional element of pride for those who successfully complete the process.

EDGE: If you had the opportunity to talk to another company about apprenticeship, what would you say?

DM: Just do it! All parties (employees, employer and the local college) reap the benefits of apprenticeship. ■

Eaton is a power management company with 2015 sales of \$20.9 billion. Eaton provides energy-efficient solutions that help its customers effectively manage electrical, hydraulic and mechanical power more efficiently, safely and sustainably. Eaton has approximately 97,000 employees and sells products to customers in more than 175 countries. The Eaton facility in Sumter, SC has been there since 1980, employs more than 750 employees and is the product line headquarters for Panelboards and Switchboards power distribution products. To learn more, visit www.eaton.com

Local Training. Global Industries.



Officially opened in Fall 2015, **Central Carolina Technical College's (CCTC)** Advanced Manufacturing Technology Training Center (AMTTC) is a 90,808 square-foot, state-of-the-art industrial training and education center. This training facility houses classes in Mechatronics Technology, Engineering Graphics Technology, and Machining and CNC Technology. In addition, the AMTTC contains a suite for Continental Tire, a simulated work environment in lean manufacturing for Caterpillar and readySC™. As an integral part of the SC Technical College System, readySC works together with CCTC to partner with industries considering a relocation or expansion in the local area.

In both classroom and lab settings, the AMTTC offers the most advanced technology, training and equipment available. Students learn from experienced professionals who refine problem-solving skills and promote critical thinking using real-world projects. Through local industry apprenticeships, partnerships and on-site labs, students receive the hands-on training that is necessary for job placement.



For the 2014–2015 school year, the average job placement rate for AMTTC programs was 91 percent. Companies who employ AMTTC program graduates include: APEX, Builders First Source, Caterpillar, Color-Fi, Continental Tire, Eaton, Kaydon, Mancor, Nucor and Suominen.

Learn more about CCTC and its Advanced Manufacturing Technology Training Center at: www.cctech.edu

readySC Helps Winbro RECRUIT THE RIGHT WORKFORCE



When Winbro Group Technologies opened its facility in Rock Hill, SC in 2011, it was the company's first venture outside of the United Kingdom. Based in Coalville, Leicestershire, England, Winbro Group is a world-leading manufacturer of advanced machining technologies, producing cooling holes and forms in and on components that are used within aero engines and industrial gas turbines.

Because of the critical nature of the end product, the company values high-skills, attention to detail and integrity in its team members. Lloyd Bromham, chief operating officer of Winbro Group Technologies in Rock Hill, credits readySC™ with helping find the right workforce for the job.

"For a company that is new to the United States," Bromham says, "readySC provides essential recruiting assistance to tap into the local market to ensure that we attract, recruit and retain individuals not only with the right skills and experience but also the right attitude to form part of the Winbro team." ■



"For a company that is new to the United States, readySC provides essential recruiting assistance."

— LLOYD BROMHAM,
CHIEF OPERATING OFFICER
OF WINBRO GROUP
TECHNOLOGIES IN ROCK HILL

VTL PRECISION REAPS REWARDS of Youth Apprenticeship



In 2014, Apprenticeship Carolina™, Trident Technical College and five Charleston-area businesses came together to establish the Lowcountry's first youth apprenticeship program. Jeff Teague, general manager of VTL Precision Inc., explains how VTL is already seeing the positive results of being one of the founding companies of the program.



EDGE: Please give us some background on VTL Precision.

Jeff Teague: VTL is a privately-owned, progressive automotive precision engineering company with world-class facilities in Europe, North America and India. We specialize in the design, development, prototyping and manufacture of high

specification precision components and sub-assemblies for automotive powertrain applications.

The core business is focused on precision components for engines, transmissions, turbo-chargers and other powertrain applications for some of the world's leading automotive brands.

VTL established a facility in Charleston in 2007 in direct support of their customer Cummins Turbo Technology. VTL employs approximately 50 full-time associates across multiple job categories. VTL has recently been awarded new business and is planning for expansion in 2017.

EDGE: Tell us about the implementation of your apprenticeship program. How did Apprenticeship Carolina and your local technical college help you get it started?

JT: VTL was involved on the ground floor as one of the first five participating companies responsible for the formation of the youth apprenticeship program in 2014. This effort and the need for the program stems from the industry-wide shortage of skilled manufacturing personnel and the aging manufacturing workforce. The average age of a worker in the industry is late forties.

Apprenticeship Carolina was instrumental in getting the program started. They worked to provide a clear pathway from concept to program execution. Apprenticeship Carolina along with Trident Techni-

cal College and the five initial manufacturers formed Charleston's first sector partnership.

By sector partnership, I mean a partnership of companies, from the same industry and in their natural labor market region, with education, workforce development, economic development and community organizations that focus on a set of key issues identified as priorities by the target industry.

EDGE: What would you say is the top positive outcome of having an apprenticeship program?

JT: The best outcome has been making progress toward our initial mission of educating youth on the wonderful, rewarding, and high-paying jobs and career paths available in the manufacturing industry. We also achieved the additional goal of filling the skills gap this year when we hired our inaugural apprentice into a full-time maintenance technician role. While working full time, he will pursue a four-year Mechanical Engineering degree with the continued financial assistance of VTL Precision.

EDGE: Is there anything specific that you'd like to highlight about your apprenticeship program?

JT: As the smallest company by far of the five inaugural companies in the sector partnership, I would like to encourage other companies to take the leap – size or existing infrastructure is in no way a precursor to having a successful apprenticeship program. The key is to simply get started and let the creativity of your workforce and the apprentices shape your specific program.

EDGE: Tell us about your company's relationship with your local technical college – how are they helping to meet the training needs of your Youth Apprentices?

JT: VTL has a long history with Trident Technical College through several of their adult education programs. Most of our employees are graduates from

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Within the apprenticeship program, Apprenticeship Carolina's role in the partnership is to:

- Explain the apprenticeship model to companies
- Draw up standards and training/education outlines based on company input
- Submit all paperwork to the U.S. Department of Labor to get program registered
- Assist with program updates as needed
- Identify funding sources to fund the model through available State and Federal incentives

.....

Trident Technical College's role in the apprenticeship partnership is to:

- Serve as intermediary between high schools, parents, kids, faculty/staff, employers and other economic and workforce development partners
- Explain to employers about partnerships and assist them with developing their own apprenticeship in collaboration with Trident Technical College and other partners
- Direct college faculty and staff on their role in Youth Apprenticeships
- Inform economic and workforce development partners on how they can assist in recruiting interested employers and high school applicants
- Educate teachers, counselors, parents and high school students on dual enrollment and youth apprenticeship opportunities for the in-demand jobs in the Charleston region
- Connect qualified students to employers
- Deliver technical dual credit training to apprentices

"I emphatically recommend the youth apprenticeship program and encourage all employers to jump in with both feet."

— JEFF TEAGUE, GENERAL MANAGER OF
VTL PRECISION (CHARLESTON) INC.



one of their programs. Trident Tech's broad goal within the program is to provide the apprentices with the foundational knowledge that employers can then build upon and reinforce through application of that knowledge.

EDGE: *Can you think of a word or phrase that best describes apprenticeship... why?*

JT: "Win – Win" is the phrase that comes to mind. Apprentices graduate high school with a high school diploma, two years of paid work experience, a certificate from the technical college and a Department of Labor recognized national credential.

Employers gain the enthusiasm, energy and ideas of a young person. Additionally, employers get actual productivity from the apprentice, and seasoned employees get engaged through the mentoring process. Lastly, employers are creating the foundation for its future workforce.

EDGE: *What do you like most about your apprenticeship program, and why?*

JT: The apprenticeship program provides the perfect conduit for young adults to succeed – an

opportunity that they may not otherwise have had.

EDGE: *If you had the opportunity to talk to another company about youth apprenticeship, what would you say?*

JT: I emphatically recommend the youth apprenticeship program and encourage all employers to jump in with both feet. Don't overcomplicate the process with misconceptions of what is needed within your company to have a successful program. As long as you can keep your apprentice safe, you are ready.

EDGE: *Is there anything else you'd like to add about youth apprenticeship and/or Apprenticeship Carolina?*

JT: My involvement in the apprenticeship program has been a career highlight for me and has paid dividends for all those involved. However, none of this would have come to fruition had it not been for the hand-holding and heavy lifting done by Apprenticeship Carolina. They seamlessly integrated all the steps of the apprenticeship process into a program, removing any hurdle that may have been in an employer's path. ■

Trident Technical College Advanced Manufacturing



TRIDENT TECHNICAL COLLEGE

Trident Technical College (TTC)

Industrial and Engineering Technology programs prepare students for a variety of jobs in advanced manufacturing. An advisory committee of local employers provides guidance on skills that are needed for employment, and labs allow students to practice the hands-on aspects of the job as well as work as part of a team.

Recognizing industry's demand for more skilled labor in the region, coupled with a need for an alternative career pathway for high school students, community leaders in Charleston came together to establish a manufacturing sector partnership and develop the region's first U.S. Department of Labor Youth Appren-

ticeship Program in 2014. The sector partnership includes high schools in all four local school districts, TTC and a consortium of industry partners. It represents a community-wide collaborative approach to developing a comprehensive career pathway that provides a seamless transition for students from secondary to post-secondary education into the skilled workforce.

Some of the local companies that employ grads: Bosch, Boeing, Hubner Manufacturing, Zeltwanger, IFA Rotorion, Scout Boats, Cummins, VTL Group, Aero Precision Products, TorqTek Design and Manufacturing.

Learn more:
www.tridenttech.edu

Programs Offered

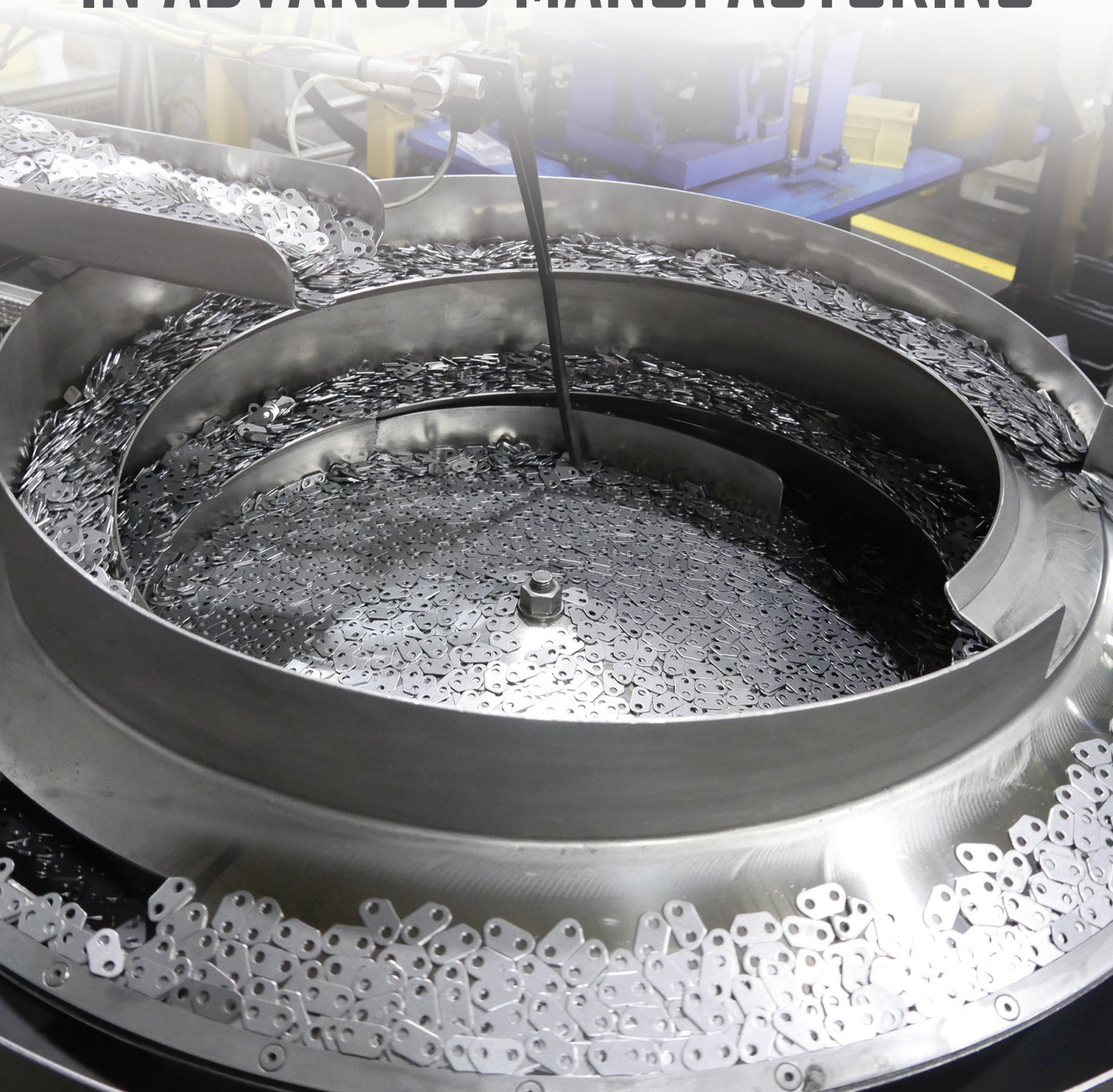
Associate Degrees

- Mechanical Engineering Technology
 - General Technology
- Career Paths in:
- Electrician: Automation and Industrial
 - Industrial Maintenance Mechanics
 - Machine Tool Technology
 - Welding

Certificates

- Advanced Automation: Mechatronics
- Basic Machining and CNC Fundamentals
- Electrician: Automated Controls
- Electrician: Industrial
- Industrial Mechanic
- Mechanical Drafting
- Welding: Gas Metal Arc and Fluxed Cored Arc
- Welding: Gas Tungsten Arc
- Welding: Shielded Metal Arc

SOUTH CAROLINA'S **BEST KEPT SECRET** IN ADVANCED MANUFACTURING



The Schaeffler Group USA Inc. has been quietly thriving in South Carolina for over half a century. While other companies were experiencing the negative impacts of changing times, fluctuations in the market, or downturns in the economy, Schaeffler just seemed to keep growing... and growing.

The German, family-owned company began its U.S. manufacturing operations in the small town of Cheraw in 1964. Originally known as INA Bearing (as it's still called by many in Cheraw), the company's first product was needle-roller bearings for desk drawers. Over the years, Schaeffler expanded and diversified, moving into automotive, industrial and aerospace sectors. Today, South Carolina is home to the German company's corporate headquarters in the Americas, as well as five manufacturing facilities. Schaeffler supplies bearings, engine components and other precision parts to over 70 percent of all automotive companies and 30 percent of aerospace.

Phil Homan, human resources manager at Schaeffler Group USA Inc., talks about the company's remarkable growth and how its sustained progress has been facilitated by readySC™, Apprenticeship Carolina™ and the SC Technical College System.

EDGE: *Tell us about Schaeffler and its history here in South Carolina.*

Phil Homan: Schaeffler was actually INA Bearing when it initially came to South Carolina in 1964 from Germany. It was a joint venture with another bearing company, and it was the first time the company had incorporated with another organization. Then, in 1969 we bought the whole process out, and that became our corporate headquarters here in the Americas. It started out with approximately 150 people, and today we employ almost 6,000 people all over South Carolina.

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*Phil Homan, human resources manager
at Schaeffler Group USA Inc.*

EDGE: *Do you have any plans for future growth?*

PH: We grow every year. It's probably the best-kept secret around.

The largest recent expansion that we did was three years ago, which was called the MultiAir and UniAir expansion. It was a joint venture with Fiat designed to build a fuel management system for its automobiles. When Chrysler bought Fiat out, we then partnered with Chrysler. That partnership represented a \$70 million investment and added 425 new jobs over a two-year period.

EDGE: *How has readySC's training and recruitment program helped Schaeffler's growth?*

PH: We've used readySC periodically throughout the years with pre-employment training classes. They were our partner during the MultiAir and UniAir expansion and conducted all the training for us. Most classes consisted of about 30 to 40 people a session. For one whole year, we ran four-week sessions one after the other, essentially adding more groups every four weeks.

We tailored the readySC training to our processes, which included our mechanical drawings, work orders, shop orders, products and the required soft-skills. We also worked closely with Northeastern Technical College (NETC) and their machining center. Students were asked to do simple machining work, so we could identify those with the potential to be good machinists, those that were best suited as good inspectors, and those that could do other necessary jobs. We tied it all together as a whole package.

**"We grow every year.
It's probably the best-kept
secret around."**

— PHIL HOMAN, HUMAN RESOURCES
MANAGER AT SCHAEFFLER GROUP, USA INC.

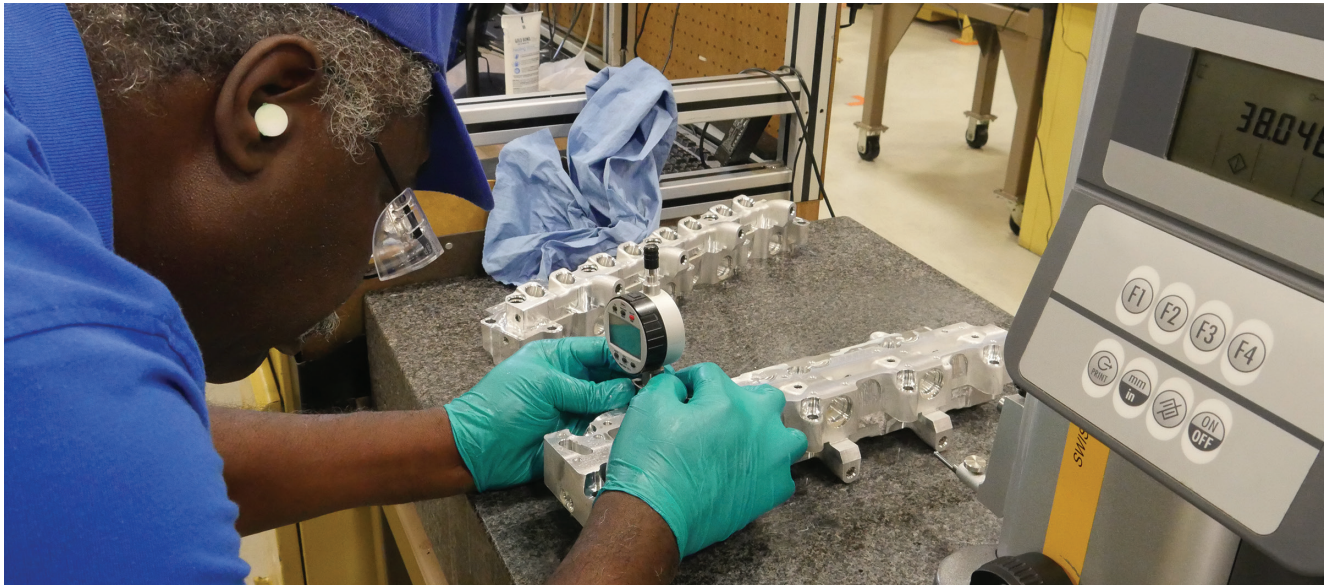
SCHAEFFLER

I think over the years we've probably done 15 to 20 projects with readySC on different-sized scales. We're in the process of doing another expansion project at the first of the year. In our current plant, we're putting in a brand-new product line that will come in from Germany. We'll pick it up, move it here, and that will add 150 to 160 new jobs. That expansion is expected to be about a \$40 million project.

EDGE: *How happy have you been with the long-term results of the readySC classes?*

PH: The retention has been great, and turnover has been very minimal, which is good. readySC worked closely with their partners like SC Department of Employment and Workforce to advertise the positions, receive applications, pre-screen applicants, set up interviews for us and handle other logistics around recruiting. Schaeffler conducted the final screening with the applicants to identify candidates for the readySC training. It was a team effort. At the end of the pre-





employment training session, I would give a presentation about the company. Some of Schaeffler's instructors also helped readySC with the classes.

A key result from this approach was that the participants were actually getting integrated into Schaeffler's system while being trained. They knew our expectations before they were ever brought on board. Those were laid out right up front in the pre-employment training. Participants understood the company's culture and expectations, their particular job requirements, and in most cases, they knew exactly what job they would be doing by the conclusion of the training. As part of the training experience, we brought them into the plant and gave them a comprehensive tour – even pointing out specific equipment and indicating, “this is the machine you are going to operate — do you feel comfortable doing that?” If they said no, we'd say, “OK, we understand.” We didn't want to bring people in that didn't feel comfortable with the job.

EDGE: *Is there anything specific that you'd like to highlight about the readySC training program, for*

instance, a trainee who has grown over the years to be highly successful at Schaeffler?

PH: We did identify four people in the last readySC training classes that really stood out. During the year following their training, they could take on more leadership in their roles because of the initiative they showed. They took charge making certain things were being done. They helped other students who were experiencing issues, and later they helped other employees who were having a problem. Going through the readySC training program helped us to quickly identify these people, and now they're moving into team leader roles.

EDGE: *If you could choose a word or a phrase that best describes readySC, what would that word or phrase be?*

PH: Flexible. Responsive. Helpful. Committed. Those would be the ones I would choose.

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Schaeffler produces parts for
70 PERCENT
of Automotive Manufacturers



The National Association of
State Agencies named Schaeffler
**NATIONAL BUSINESS
OF THE YEAR IN 2014**

because of its apprenticeship
programs in South Carolina

Schaeffler produces parts for
30 PERCENT
of Industrial, Aviation & Aerospace



APPRENTICESHIP PIONEERS IN SOUTH CAROLINA

The Schaeffler Group's Apprenticeship Program in Cheraw is the oldest U.S. Department of Labor (USDOL) certified journeyman program of its type in South Carolina. Begun in 1988 as the result of a dual effort between Northeastern Technical College (NETC) and Schaeffler Group, the program focused on tool and die makers.

In 1994, the apprenticeship program broadened to include skilled setup machinists. Both programs are designed to combine education and on-the-job training for the apprentice. The two curriculums are each 7,000 hours in length and combine classical European and American apprenticeship training concepts. In 2016, Schaeffler apprenticed a third occupation — electrical-mechanical and programming.

Schaeffler hires 15 – 20 apprentices most years, but a total of 42 apprentices were added to the 2016 fall semester as a result of the newly apprenticed occupation.

Since the program's inception, over 300 apprentices have been recruited.

Graduating apprentices receive:

- 2-year Associate Degree in Machine Tool Technology from NETC
- Apprenticeship Journeyman License from USDOL

Schaeffler has a 90 percent retention rate of apprentices who graduate the program.

EDGE: *Let's move on to apprenticeship. Schaeffler has the distinction of being the first company to start a registered apprenticeship of its kind in South Carolina.*

PH: It began in 1988, when we started looking at the workforce for toolmakers and realized it was a craft that was going away. We asked ourselves, "What do we need to do to grow new toolmakers, and how do we go about that?" Unfortunately, there was no Apprenticeship Carolina in 1988, so we went to the local technical college and said, "Look, if we do something with apprenticeship, can you support it?" They said, "Yes, we can do that. We can help you out and make this work."

We went through four different iterations before we finally got it all ironed out. We worked directly with the U.S. Department of Labor (USDOL) to get it registered. They helped, and the technical college helped us get it going.

Our first group started out with seven people.



Apprentices train at Northeastern Technical College.

We now put in about 20 apprentices per year, and these are skilled machinists. The programs are for tool and die makers and very high-skilled setup people. This year we apprenticed a third occupation, which is electrical-mechanical and programming. As a result of this addition, we put a total of 42 apprentices into the fall semester this year.

EDGE: *Do you see this as a way to deal with your aging workforce?*

PH: This is the pipeline that backfills into those positions— that's how we look at it. Some companies look to apprenticeship programs for immediate results. We have a longer-term approach. I'm looking at this ten-years down the road. Everything that Schaeffler does starts with a ten-year to twenty-year plan, whether it's how we're going to manage a new product or how we are going to form a workforce. Apprenticeship is an investment in our future, and it's an investment in the community.

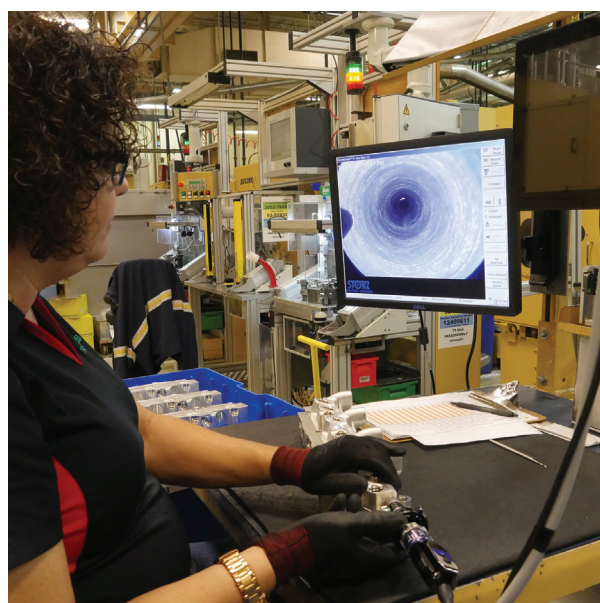
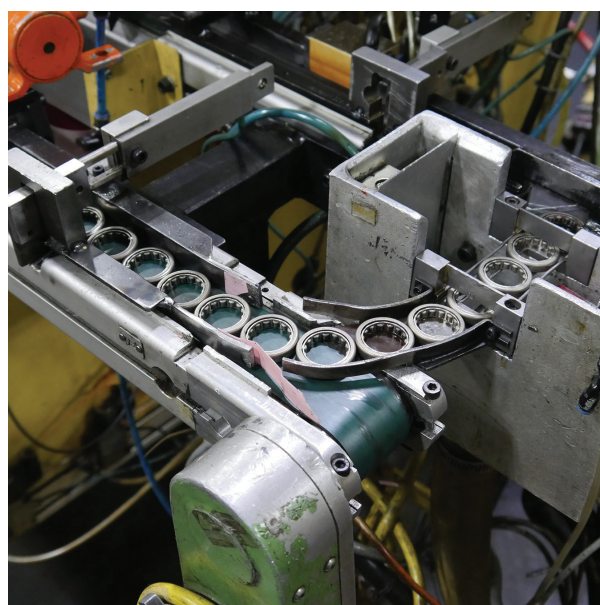
EDGE: *What do you think is the top positive outcome of an apprenticeship program?*

PH: The top positive outcome for Schaeffler is that we've got a highly-skilled, trained workforce. They totally understand the systems that we have in place, and they also represent our future leadership. We've had numerous people travel to Germany anywhere from one year to two years for additional training, and when they return, they become the next technical leader.

We have someone right now, who started out as an apprentice, went from there to be a toolmaker, and then said, "I want to learn more. I want to do more." So we moved him into a supervisory role, and he wanted to do even more. As a result, we offset his costs to go to college and earn a business degree. We've now moved him into what we call a segment leader, where he manages a business unit that represents \$80 million per year. This is clear evidence that apprenticeship can offer a definite path forward in your career.

EDGE: *What has it been like starting a new apprenticeship program today versus your experience in 1988?*

PH: Apprenticeship Carolina has been very helpful. When we got ready to run the new apprenticeship program in electrical-mechanical and programming, an apprenticeship consultant came out and met with us and the local technical college. They helped provide



continued on next page ➤



some input on curriculum that we weren't really sure about because it was a new program. They pulled all of that together, and handled the logistics around getting the program registered. We didn't have to go through the long, lengthy process that we did when we started out back in 1988. Having Apprenticeship Carolina help us through the process was very beneficial. Now Apprenticeship Carolina visits us on at least a quarterly basis and asks if there is anything more they can do to help us, or if there's anything new we need. They're flexible. They're responsive, and they're committed to what they do.

EDGE: *What are some of the financial incentives that have helped your apprenticeship program over the years?*

PH: We've received a tax credit (\$1000 per apprentice), and now we're tapping into the additional funding that's available through the SC Apprenticeship Initiative Grant. In addition, SC lottery tuition assistance helps to offset some of the costs. Of course, it's always nice when we get things paid for, but we don't look at it from the standpoint of what we could get back financially, at least not in the short term.

When I talk to other companies about apprenticeship, the first thing I tell them is, "This is an investment in your future." I spend approximately \$100,000 per semester with wages, benefits, tuition and other costs. However, we see this as a long-term investment in our company's future success. We've found that we have a loyal workforce that stays with us. Our workforce knows they can either move up through the supervision and management roles, or they can become that really high-skilled technical leader. They then can pass that information back down to other operators and other people. That's the real payoff for us.

EDGE: *It's the gift that keeps on giving.*

PH: That's right.

EDGE: *You've mentioned working with your local technical college. Could you tell us a bit more about how NETC helps with the apprenticeship program?*

PH: NETC provides all the instructors for our programs. We've also worked with them to revamp their machine technology program so that it is geared toward our apprenticeship program.

Schaeffler Group North America

Schaeffler Group North America is responsible for the engineering, production, sales and marketing for the INA, LuK, FAG and Barden brands throughout the United States, Canada, Mexico, Central America and the Caribbean. All four brands provide high-performance, precision technologies for the automotive OEM, industrial OEM and distribution markets as well as the aerospace industry.

- INA is a leading supplier of rolling bearings, linear motion, engine components, plain bearings and precision components.
- LuK is a key source for automotive clutch, torque converter, hydraulic and transmission systems.
- FAG is a major global supplier of bearings with core competencies in ball, taper, cylindrical and spherical bearing products.
- The Barden Corporation focuses on high precision, miniature and aerospace products.

Schaeffler's corporate headquarters for the Americas is in Fort Mill, South Carolina, along with five manufacturing plants in Cheraw, Spartanburg and Fort Mill.

The college has been very responsive when we want to make changes to the curriculum. We took some things out that don't really apply anymore to industry today and added other items. For instance, we removed the old sketching and added more CAD. NETC didn't have a Pro-E (engineering design) program, so they bought it and put it into place for us. They've also been very flexible on scheduling with us.

EDGE: *You've said that you often talk to other companies about their workforce needs. What do you say to a company that has a workforce need and doesn't know where to start?*

PH: I first encourage them to determine their need: is it a new product that you're going to undertake, do you want to enhance your workforce, or are you looking at an aging workforce and want to bring that skill level to where it needs to be? Then we discuss the different options available. For instance, readySC is on hand for new projects and expansions. They can assist with recruiting and training. The training expense that you save there can be used for training incumbent workers who need to upgrade their skills. As far as the apprenticeship program, I tell them it's a commitment, and you have to understand that. However, it's a commitment with a great return on investment.

EDGE: *What do you tell companies about the technical college?*

PH: I tell them the tech college is the way to go. We're using it as an arm of our training group. They work with us closely. In fact, NETC is starting a metrology class that we need for our quality people. We've done conversational German, conversational Spanish, and they provided our CNC training. They've been very responsive to us as an

industry. They provide instructors, continuing education programs and space. As we've experienced these recent increases in staff, we've lost training space and training rooms, so they've been quick to provide us with training rooms that we needed. They are wonderful partners – extremely responsive and very helpful.

EDGE: *What do you see as the greatest benefit of using all three resources – readySC, Apprenticeship Carolina and the technical college – to meet your company's training needs?*

PH: I think of it as a three-legged stool, and it's very important that it all works together. First, you've got readySC, which through its recruiting and training services provides you with your initial pool of people for a startup or expansion. They work very closely with the technical college to get the classrooms, materials, training and other things that you need. Then you can seamlessly segue to the apprenticeship program and the local tech college to address long-term training needs.

EDGE: *Is there anything else you'd like to add about readySC, Apprenticeship Carolina or the technical colleges?*

PH: I think companies really need to take a hard look at these resources. If they're looking to locate to this state, they need to talk to the right people and understand what's available for them. They need to talk to companies that have had interaction with all three programs and hear their experiences. I think that's the real selling point. Just like if you are looking to buy a certain brand of car, firsthand testimonials are the best. All the companies who use or have used these programs need to encourage others to come here to South Carolina, because our state has the recruiting and training expertise to help you get good people to work for you. ■

A SEAMLESS TRAINING SOLUTION for Horsehead



Horsehead Corporation is the leading recycler and manufacturer of zinc-based products in North America. The company opened its first green-field facility for recycling electric arc furnace dust in Barnwell, SC in 2010. Eric Stroom, Horsehead's plant manager, says the seamless transition between the services of readySC™, Apprenticeship Carolina™ and Denmark Technical College (DTC) helped forge the company's pathway to prosperity in South Carolina.

Initially, readySC worked with Horsehead to provide the customized recruiting and training solutions needed to begin successful production. According to Stroom, "readySC's services played a significant role in Horsehead's decision to locate in South Carolina, and it's a decision we haven't regretted. The readySC team did an outstanding job supporting the recruitment and training of our initial workforce. Our project manager provided precise and competent program management. Our curriculum specialist coordinated program development and logistics flawlessly. The team worked closely with

our group to develop a spot-on curriculum and training vehicle that our staff effectively delivered. This program was an essential ingredient in providing our new employees with a basic understanding of Horsehead's mission, expectations, technologies and processes on *day one* of employment. Our startup was a tremendous success, due in large part to the preparation of our workforce through readySC. It was a tremendous team effort!"

Apprenticeship Carolina helped the workforce continue to grow by guiding Horsehead through the registered



"readySC's services played a significant role in Horsehead's decision to locate in South Carolina, and it's a decision we haven't regretted."

— ERIC STROOM, PLANT MANAGER
OF HORSEHEAD CORPORATION

apprenticeship process from initial information to full recognition in the National Registered Apprenticeship System. According to Stroom, "Apprenticeship Carolina has been an instrumental aspect for further education of people in our operation. Since we started up our operation, we've developed an apprenticeship program for our maintenance employees, to take them over the next three years and develop their skills and competencies and then also reward them with compensation associated with incremental steps of improvement."

Training for the apprentices is provided on-site by DTC. Stroom says this is "a tremendous growth opportunity for our people and a great benefit to Horsehead Corporation to know and understand that we fully train and certify people in the tasks that they need to be doing. Competency is critical – from a safety, from an environmental standpoint, from customer satisfaction and operational results." ■



Denmark Tech brings advanced manufacturing to you

Denmark Technical College (DTC) brings advanced manufacturing training directly to local manufacturers through its Mobile Training Unit (MTU). The MTU is outfitted with technical training equipment, electrical and pneumatic power as well as Wi-Fi. Programs that are currently being offered on plant sites include: Industrial Maintenance (Electrical-Mechanical), Certified Production Technician, Certified Logistics Technician, Process Technician and STEM Awareness.

Horsehead Corporation in Barnwell, SC makes the most of the MTU by using it to train its employees in an Industrial Maintenance apprenticeship. Eric Stroom, Horsehead's plant manager, explains the advantages of the MTU: "We have been partnering with Denmark Tech for six years, and it has been a good experience with proven performance results. The flexible on-site training is a convenient and efficient way for us to educate our workforce."

The MTU allows DTC to transfer equipment from the mobile unit to the company training room so employees can be trained on-site. Employees can further their education by obtaining both their Department of Labor Apprenticeship credential and any one of DTC's Institute of Advanced Manufacturing certificates without ever leaving the plant.

Learn more: www.denmarktech.edu

Advanced Manufacturing at Aiken Technical College



Aiken Technical College

Aiken Technical College's Center for Energy and Advanced Manufacturing provides students with the skills they need to be successful in an evolving industry that requires a highly-skilled and knowledgeable workforce. The 35,000-square-foot facility was dedicated in September 2015, and includes four classrooms, five bays, meeting space and faculty and staff offices.

The state-of-the-art center has a flexible design to allow Aiken Tech to create learning environments that can accommodate changes as industries' needs and workforce expectations evolve.

Graduates of Aiken Tech's advanced manufacturing programs have been hired by companies such as Bridgestone, Michelin, AGY and Hubbell, just to name a few.

Learn more: www.atc.edu



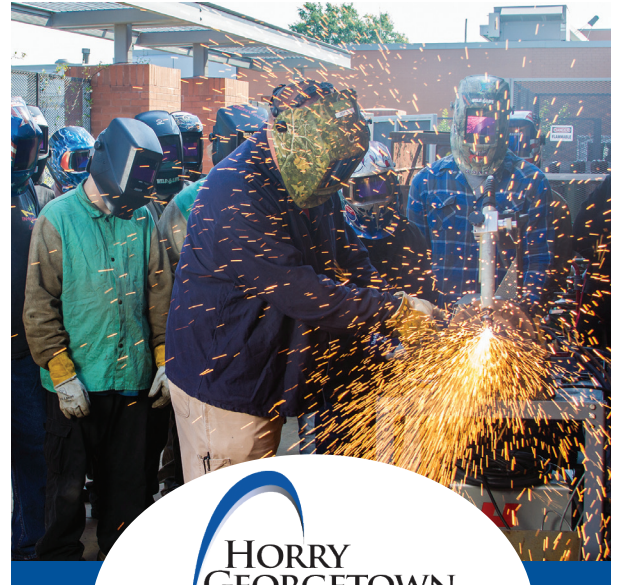


Greenville Technical College (GTC) is partnering with Clemson University (CU) to create the Gene Haas Center for Manufacturing Innovation (CMI). The number-one goal for the CMI is to increase the number of skilled workers for manufacturing in order to close the skills gap that has hampered the progress of many Upstate employers.

CMI brings many firsts to advanced manufacturing education. The involvement of CU as a partner, which is designed to bridge the gap between the education of the technician and the education of the engineer, is the first of its kind between a technical college and a research university in the U.S. This is not a shared location for separate offerings; instead, educational offerings will be integrated.

A Manufacturing Honors College, which will allow GTC and CU students to work together to solve real-world manufacturing challenges, is also a first. An additive manufacturing partnership with Renishaw at a technical college is another groundbreaking effort, and the open manufacturing lab for education, training and industry collaboration is unlike anything else in South Carolina. This campus is a first for GTC with its focus on one sector of the economy and contains the college's first precision metrology lab.

Learn more: www.gvltec.edu



New Advanced Manufacturing Centers coming to Horry-Georgetown Technical College (HGTC)

In response to industry demands, HGTC will be constructing two new 25,000 sq. ft. Advanced Manufacturing Centers in Horry and Georgetown counties over the next several years.

The manufacturing industry is recognized as one of the driving forces behind economic recovery and is essential to ongoing economic prosperity, while individuals proficient in the areas of advanced welding technology, machine tool/CNC and mechatronics are among the most sought after and highly paid workers in America.

Programs Offered at HGTC

- Machine Tool Operations
- Machine Tool Technology
- Advanced Welding Technologies

Learn more: www.hgtc.edu

Meeting the Needs of the Advanced Manufacturing Industry



Midlands Technical College (MTC)

recently opened its Advanced Manufacturing and Skilled Crafts Center. The center is the new home to many of MTC's programs that prepare students for careers in advanced manufacturing and skilled crafts, such as Manufacturing Technician, Industrial Mechanics, Industrial Electricity, Industrial Maintenance, Mechatronics and Building Construction Technology.

MTC invested \$5.35 million in the building and equipment to better train a sustainable pipeline of technical talent to meet local industry's skilled workforce needs. The facility has 13 labs for hands-on learning, a computer lab and five traditional classrooms. There is also a student atrium and common area.

Learn more: www.midlandstech.edu



OCtech Trains for Advanced Manufacturing



Benjamin Holmes used a 3D printer to construct a drone for a class project

OCtech
Orangeburg-Calhoun Technical College

Orangeburg-Calhoun Technical College (OCtech) understands the need for a workforce trained for the changes that are coming to South Carolina. They are taking the lead in preparing students for excellent careers in advanced manufacturing. From robotics to smart machines and 3D printers,

the OCtech campus is equipped with state-of-the-art laboratories. It also offers a KUKA KORE robotics certification. Programs give students the knowledge and skills necessary to help make industries world-class.

Learn more: www.otech.edu

"Letting us work on projects we were interested in really encouraged us to thrive. The people, the environment, the atmosphere – it's close to the work environment I have now at Nucor."

— Benjamin Holmes, 2016 Engineering Graphics Technology graduate, 3D steel detailer at Nucor

Programs Offered

Associate in Applied Science

- Computer Technology (Programming and Network Security)
- Electronics Engineering Technology
- Engineering Design Technology
- Industrial Electronics Technology
- Machine Tool Technology

Certificates

- Computer Aided Design
- Computer Numerical Control
- Industrial Electrician
- Industrial Maintenance (Basic and Mechanical/Electrical)
- Mechatronics
- Production Operator
- Professional Truck Driving
- Welding (Basic and Intermediate)

Mechatronics Enrollment Growing



SPARTANBURG
COMMUNITY
COLLEGE

For years, the Center for Advanced Manufacturing and Industrial Technologies (CAMIT) programs at **Spartanburg Community College (SCC)** have employed talented instructors and provided modern, hands-on training resources to students. The result of which is highly skilled graduates for the Upstate workforce. SCC's most popular program in CAMIT has been mechatronics — a program of study covering basic electrical and motion control applications.

These applications are frequently used in industries with automated machining, assembly or material handling applications, such as our local partner, BMW.

Enrollment for the mechatronics program is currently at the highest number ever for SCC, with 275 students in classes offered at four of the five SCC campuses.

Learn more: www.sccsc.edu/industrial/

Enrollment for the mechatronics
program is currently at the
highest number ever for SCC...

Automated Manufacturing Programs of Study

- Automated Manufacturing Technology, AAS Degree
- Industrial Electricity Certificate
- Industrial Electricity, AAS Degree
- Industrial Electronics Technology, AAS Degree
- Industrial Repair Technology Certificate
- Industrial Repair Technology, AAS Degree
- Mechatronics Technology Certificate
- Mechatronics, AAS Degree
- Production Associate Technology I Certificate
- Production Associate Technology II Certificate
- Production Associate Technology, AAS Degree



readySC™ is ready to help with your recruitment needs:

www.sctechjobs.com



OUR **UNIQUE** SOLUTION

From your initial start-up and early production goals to your organization's long-term growth strategy, South Carolina offers a comprehensive workforce solution custom-designed to meet your needs. Our internationally renowned programs — **readySC™** and **Apprenticeship Carolina™** — along with our robust **technical college system** provide the training and education necessary to build a competitive workforce ready for today's demands and tomorrow's challenges. Learn more at www.sctechsystem.edu.

